



Quality Improvement in Surgical Care

“The National VA Surgical Quality Improvement Program is a remarkable collaboration among policy makers, researchers, and clinicians.”

John R. Feussner, M.D.
Chief Research and Development Officer

“The National VA Surgical Quality Improvement Program is a model for how quality improvement should be done. Our task is how to replicate this in other areas of VHA.”

John G. Demakis, MD
Director, Health Services Research and Development

What is the National VA Surgical Quality Improvement Program?

The National VA Surgical Quality Improvement Program, or NSQIP, was implemented in 1994 to provide reliable, valid and comparative information about surgical outcomes (morbidity and mortality rates) among the 123 VAMCs performing major surgery. This information enables researchers, clinicians and managers to identify factors that contribute to high-quality surgical care, as well as those factors that result in less than optimal care, and to identify best practices that will improve care. Thus, this Program aims to develop performance measures that will result in better practices that improve the quality of surgical care for veterans.

To accomplish this, the NSQIP was designed based on the hypothesis that the quality of surgical care can be measured, compared and enhanced in various institutions by the use of proper, validated and peer-reviewed models for risk-adjusted reporting of outcomes¹. Serving as an internal review mechanism, the NSQIP builds upon the methodology, analysis and reporting developed in the National VA Surgical Risk Study (NVA SRS). The statistically determined expected outcome (E) is compared with the actual observed outcome (O) for all patients in the study, using an observed to expected (O/E) outcome ratio. The numerical values obtained allow risk-adjusted comparisons of outcomes in evaluating the quality of care in each surgical program. Reports on these comparisons are then provided to VA chiefs of surgery, medical center directors, and network directors, providing a tool with which the quality of surgery for veterans can be monitored, compared and improved.

Why was the NSQIP developed as a risk-adjusted model?

Patients' health status after medical treatment is a reflection of the process of care they receive. In comparing postsurgical mortality and morbidity rates, the assumption is that surgical services with low rates of complications and death have better processes and structures than surgical services with higher rates. However, clinicians recognize that some surgical services may operate on patients who are sicker. Therefore, the NSQIP developed methods of adjusting for how sick patients are before major surgery and provides post-operative morbidity and mortality rates that are adjusted for patient risk and severity of illness.

In 1997, NSQIP identified 11 surgical services with 30-day postoperative mortality rates that were significantly lower than the VA average and 13 surgical services with mortality rates that were significantly higher than the VA average. If risk adjustment had not been applied, 64% of these would have been misclassified as high or low outliers¹ (The term “outliers” indicates a rate that falls two standard deviations from the mean of all services.).

Why is the NSQIP important to VA managers?

The National VA Surgical Quality Improvement Program was designed to operationalize research results; in other words, to translate research results into better standards of care. The quality of surgical care at VA hospitals has improved significantly since the inception of NSQIP, a collaborative effort of HSR&D and VA's Office of Quality Management and Patient Care Services. The NSQIP has been

instrumental in identifying ways to improve surgical care and has resulted in:

- better surgical and anesthesia techniques,
- improved supervision of residents in surgical training, and
- improvements in technology and equipment that have resulted in measurable improvements.

For example, since 1994, the 30-day mortality and morbidity rates for major surgery have fallen 9% and 30%, respectively. In addition, improvements in postoperative morbidity and mortality rates after major surgery have occurred at the same time that the median postoperative length of stay in VAMCs has declined by 4 days between 1991 and 1997².

NSQIP serves as a tremendous resource for VA managers in enhancing the quality of surgical care. The high quality information provided to managers on surgical care allows for consistent monitoring and improvement. This type of study also serves as a model for the facilitation of continuous quality improvement programs that will decrease the variability in surgical care while increasing quality of care. Improving the quality of surgical care is probably the most effective means of reducing costs and increasing value³.

What are some future plans for NSQIP ?

The success of NSQIP has led to two major initiatives. One is a pilot study collecting pre- and postoperative functional outcomes of veterans undergoing major surgery in urology and orthopedics in 14 VAMCs. Another initiative is collaboration with three affiliated academic health centers to implement the NSQIP at non-VA hospitals in order to provide comparison data from non-VA hospitals performing major surgery¹. The NSQIP encourages surgical centers to examine their practices and learn from each other; thereby fostering a continuous sharing of information that results in improved practices and better patient care.

Below are recent findings from the National VA Surgical Quality Improvement Program and its predecessor, the National VA Surgical Risk Study.

Patient outcomes related to coordinating work responsibilities

Growing evidence exists that patient outcomes are related to how effectively health care organizations coordinate work responsibilities among their staff. Surgical services are an excellent setting for studying the role of coordination in patient care delivery. A typical surgical service is comprised of several interdependent units among which patients are transferred during the course of an inpatient stay for surgical care. The interdependency among these units implies a strong need for coordination among surgical staff (i.e., surgeons, anesthesiologists and nurses).

A study sponsored by VA's HSR&D utilized the NSQIP to determine how surgical services can be managed most effec-

tively. Study participants were the 44 largest VA surgical services. There were two primary data collection activities: 1) a survey of surgical staff at each participating site, and 2) site visits to 20 of the 44 participating sites – 10 with the highest and 10 with the lowest risk-adjusted morbidity and mortality rates. The study team used the survey and site visit data to assess the relationship between surgical outcomes and different patterns or approaches to coordinating surgical staff.

Overall, study results indicated that the surgical services that used a variety of both personal and standardized coordination practices had better outcomes. Regarding personal approaches, the surgical services with the best outcomes were more likely to emphasize interdisciplinary meetings and discussions. With respect to standardization, the high-performing surgical services were typically farther along than the other surgical services in the development and implementation of clinical pathways and protocols. High performers also emphasized training and education to standardize the skills of their staff.

Young GJ, Charns MP, Daley J, et al. Best practices for managing surgical services: The role of coordination. Health Care Management Review, 22: 72-81, 1997.

Young GJ, et al. Health Services Research, winter issue, 1998.

Young GJ, Charns MP, Desai K, et al. Patterns of coordination and clinical outcomes: A study of surgical services. Health Services Research, 33(5): 1211-36, 1998.

Validating risk-adjustment surgical outcomes

The primary assumption in using risk-adjusted outcomes as a measure of quality of care is that providers with the best outcomes will be those with the most effective structures and processes for delivering care. A study was conducted to assess the validity of risk-adjusted surgical morbidity and mortality rates as measures of quality outcomes. [These risk-adjusted surgical outcome measures were initially developed as part of the NVASRS.] A structural survey of 44 VAMC surgical services and site visits to 20 surgical services with higher than expected and lower than expected risk-adjusted 30-day mortality and morbidity rates were conducted. The staff was blinded to outlier status. Main outcome measures included assessment of technology and equipment, technical competence of staff, leadership, relationship with other services, monitoring of quality of care, coordination of work, relationship with affiliated institutions, and overall quality of care.

Surgical services with lower than expected risk-adjusted surgical morbidity and mortality were those identified by the site visit teams as having the best practices. Other factors associated with lower than expected risk-adjusted surgical morbidity and mortality included significantly better technology and equipment in operating rooms and intensive care units. This study provides further evidence that

significant differences in several aspects of process and structure of the delivery of surgical care are associated with differences in risk-adjusted surgical morbidity and mortality rates. It is hoped that the "best practices" of surgical services with better than expected outcomes will serve as a source of innovation and possible process redesign for other surgical services both in and outside the VA.

Daley J, Forbes MG, Young GJ, et al. Validating risk-adjusted surgical outcomes: Site visit assessment of process and structure. Journal of the American College of Surgeons, 185(4): 341-351, 1997.

References:

1. Daley J, Forbes MG, Young GJ, et al. *Validating risk-adjusted surgical outcomes: Site visit assessment of process and structure.* Journal of the American College of Surgeons, 185(4); 341-351, 1997.
2. Khuri SF, Daley J, Henderson W, et al. *The Department of Veterans Affairs' NSQIP The first national, validated. Outcomes-based, risk-adjusted, and peer-controlled program for the measurement and enhancement of the quality of surgical care.* Annals of Surgery, 228(4); 491-507, 1998.
3. Jones RS, Meakins JL. *The future is now.* (Editorial). Journal of the American College of Surgeons, 185(4); 408-409. 1997.

For more information about NSQIP, or to receive a list of their publications, such as their biannual newsletter, call **Jeannette Spencer, R.N.**, National Clinical Coordinator, National VA Surgical Quality Improvement Program (Chairman's Office); Brockton/West Roxbury VAMC; phone: 617-323-7700, x6740.

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